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AUTHOR Allen, Lili
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ABSTRACT

This guide provides a "road map" to the various ways that schools and employers assess high-performance competencies, such as problem solving, information management, and communication and negotiation skills. The guide begins with a brief analysis of why it is important to assess these skills in light of the current standards environment in education and key trends in the economy. The guide includes an overview of tools and materials for assessing high-performance competencies and profiles of selected tools and materials. The methodologies range from "off-the-shelf" short answer tools to relatively expensive hands-on assessments. The profiles range from simples descriptions of existing materials to extended narratives of program or system development. Several of the strategies, especially those in the section on competency assessment in schools, outline processes that schools and school systems have developed in collaboration with partners. The tools are grouped into the following sections: (1) on-demand tests, both multiple choice and short answer; (2) self-assessments; (3) competency assessment in schools; (4) competency assessment in the workplace; and (5) competency assessment in adult education settings. This guide can be a starting point for those who want to equip young people with a broad range of cross-cutting high-performance skills to help them succeed in postsecondary education and the changing economy. (SLD)

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LAB Working Paper No. 2

Competencies That Count

Strategies for assessing high-performance skills

Lili Allen

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Northeast and Islands Regional Educational Laboratory

LAB

a program of
The Education Alliance
at Brown University

222 Richmond Street, Suite 300
Providence, RI 02903-4226

Phone: 401/274-9548
Fax: 401/421-7650
E-mail: info@lab.brown.edu
Web: www.lab.brown.edu

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This guide provides a "road map" to the various ways that schools and employers assess high-performance competencies—such as problem solving, information management, and communication and negotiation skills. The importance of such competencies is becoming increasingly evident because of their relevance both to school and to job performance. The guide begins with a brief analysis of why it is critical to assess these skills in light of both the current standards environment in education and key trends in the economy. The guide includes an overview of tools and materials for assessing high-performance competencies and profiles of selected tools and materials.

The methodologies described here range from "off-the-shelf," short-answer tools to relatively expensive, hands-on assessments. While some assess high-performance competencies in a relatively traditional manner, through multiple-choice questions about hypothetical scenarios, others document and assess the ability of students to grapple with messy, real-world problems and to choose the appropriate tools and methodologies for accomplishing a task. The former assess knowledge of cross-cutting competencies and are likely to withstand challenges of reliability and validity, while the latter assess how students use cross-cutting competencies in practice and demonstrate what students can do in actual situations.

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Because of the variability in methodologies, the profiles range from simple descriptions of existing materials to extended narratives of program or system development. Several of these strategies—especially most of those in the section "Competency Assessment in Schools"—outline processes that schools and school systems have developed in collaboration with partners. The New Hampshire Competency-Based Transcript, for example, is the story of a forward-thinking state department of education that engaged with business and higher education partners to create a statewide system to capture student learning of high-performance competencies. Another state could adapt the resulting transcript, but, more importantly, New Hampshire's system-building process could be used to develop a tool that reflects another state's needs and strengths in educational and workforce development.

Other strategies have been developed for a specific setting (e.g., community colleges, adult education centers) and could be adapted for alternative settings. For example, teachers seeking ways to assess student skill gains in the completion of projects could adapt the technique of behavioral interviewing, which is widely used in the corporate sector. We believe that the methodologies described here can promote cross-fertilization among the secondary education, adult education, corporate, and community college fields and inspire educators to try a range of strategies to teach and assess these high-performance competencies.

Why Assess High-Performance Competencies

As we turn the corner to the new millennium, more and more states and districts are implementing new high-stakes exit exams that hold both a promise and a threat for young people: these exams promise to hold all students to the same high standards, but, at the same time, they threaten to crowd everything except traditional academics out of the curriculum.

This state of affairs is surprising given the foundation upon which the standards movement rests. Early in the standards movement, there was much talk about structural changes in the nature and organization of work, the labor market, and the global economy, and how these changes create a need for a new set of high-performance competencies. Educators, policymakers, industry leaders, and academics concurred: to succeed in today's economy, adults need cognitive, interactive, and problem-solving skills, along with more sophisticated academic skills than school systems were offering. Most notably, a 1991 Labor Department blue-ribbon task force identified so-called SCANS skills that it considered critical for economic success in the modern workplace.[1] According to the task force, these skills included cognitive skills, personal qualities, and competencies such as the abilities to collect and manage information, identify and use resources, work with others, and understand and design systems. At the same time, parents in upper-income communities became concerned that their children might not be gaining the critical thinking skills that are essential for professional careers, while literature emerging from graduate schools stressed the need for students who are completing advanced academic work to have such high-performance skills as teamwork and problem-solving.

In recent years, however, the notion of a common core of cross-cutting skills has been all but forgotten in the

[1] SCANS stands for Secretary (of Labor's) Commission on Achieving Necessary Skills. See U.S. Department of Labor, Secretary's Commission on Achieving Necessary Skills, What Work Requires of Schools: A SCANS Report for America 2000 (Washington, DC: U.S. Department of Labor, 1991).

flurry of high-stakes, state- and district-level, standardized testing. For reasons of simplicity, cost, and validity, most states have introduced standardized tests that reward the mastery of traditional subject matter and thereby drive teachers to focus their classes on that content. Because a student's achievement of a certain level of academic skill and knowledge traditionally represents a gateway to college, most educators and the public also perceive these as the best predictors of a person's ability to thrive in the economy and as a community member.

Nevertheless, traditional academic skills and knowledge are not enough to help students address the ambiguous, complex, semi- or unstructured problems of the real world. In fact, while often seen as "career competencies" of value only in the workplace, high-performance skills are as important for success in K–12 and postsecondary education as they are in employment. Their centrality increases the higher one goes in education, and, as a result, they are becoming part of curricula and pedagogy in law schools, medical schools, and business schools. Instead of artificially separating career competencies from academic or intellectual competencies, we need to focus on preparing young people to succeed in all levels of formal education, in the workplace, and in community life.

As any educator knows, the best way to encourage the teaching and learning of a more integrated set of skills is to assess those skills. However, many schools, districts, and communities choose not to try to incorporate large-scale performance assessments into their content standards and assessment systems, in part due to complications concerning validity. At the same time, and even though high-stakes, standardized tests are the most visible aspect of standards-based reform, some communities are choosing to use *multiple* measures to demonstrate student outcomes. They are adding the assessment of competency assessments—the assessment of high-performance or cross-cutting skills—to their portfolio of measurement tools.

Competency assessments are attractive for a number of reasons:

- Competency assessments can provide a means to capture learning that takes place in workplace and community-based learning experiences.
- They can indicate the extent to which students who may not perform well on traditional standardized tests have gained important knowledge and skills that will affect their future success.
- They can indicate ways to enrich curricula to include additional cross-functional skills.
- They can provide a bridge to local workforce development initiatives.

Perhaps most importantly, high performance assessments can show us what students can do rather than focusing only on where their deficits lie.

Tools and Methodologies for Assessing High-Performance Competencies

We have cast a wide net in surveying and identifying methodologies for assessing cross-cutting competencies. While some originated in the high school building, others were designed to help corporations identify qualified entry-level employees or were created by collaborations among community-based organizations, schools, and business partners. *This list is by no means exhaustive.* Instead, it identifies types of assessments, presents one or two examples of each type, and, to the extent possible, illustrates how the assessments have been used.

For ease of navigation around the methodologies, the assessments are grouped here into five categories:

- *On-demand tests, both multiple-choice and short-answer:* Work Keys (ACT, Inc.); Workplace Success Skills (Learning Resources, Inc.)

  Self-assessments: Working (H & H Publishing Company)

- *Competency assessment in schools:* New Standards Project (National Center on Education and the Economy and the University of Pittsburgh); New Hampshire's Competency-Based Transcript; Coalition of Essential Schools/Transitions Project; SCANS 2000 Center/AES International

- *Competency assessment in the workplace:* Massachusetts Work-Based Learning Plan; Behavioral Interviewing; SHL Job Simulations

- *Competency assessment in adult education settings:* Equipped for the Future

How to Approach the Assessment Tools

As you review the descriptions of tools and methodologies, bear in mind the context in which you plan to implement this type of assessment. Adapting the tools and methodologies requires various levels of involvement of and preparation by the teacher and community partners. In general, to make it possible to assess cross-cutting competencies, educators and business/community partners need to:

1 ***Identify the specific skills that a project or community experience, such as an internship, would be likely to develop.*** Most of the methodologies described here identify and define what skills they assess; schools might wish to use a tool that aligns with what their students have an opportunity to learn. Alternatively, some schools may want to create a process to identify, with their students or faculty, what skills they would like students to attain through projects, courses, or course sequences. For example, as a method of developing faculty support for reform, schools involved in the Coalition of Essential Schools engage faculty in determining what students should be able to know and do. Similarly, an individual teacher might work with a class to determine what skills should be gained through particular assignments or activities, or a community partnership might bring together employers and school partners to identify skills that work-based learning experiences should offer.

2 ***Determine the primary purpose of the assessment.*** It may be:

- To give feedback to the student for mid-course corrections as part of the learning process. The Massachusetts Work-Based Learning Plan has mid-course check-ins embedded in the course of documentation.

- To offer additional skills not gained elsewhere in the curriculum. For example, through an adaptation of the behavioral interviewing process, students could become more reflective of their learning and learn to gather evidence of and articulate the skills they have gained.

- To provide a culminating evaluation. Traditionally, assessments have been used for this purpose.

- To document, and perhaps accredit, skills so that students can convey their skills to postsecondary institutions or employers. Most of the "ready-to-use" evaluations are legally defensible. The New Hampshire competency-based transcript was designed collaboratively to be a portable record of learning for both postsecondary institutions and employers.

Tools and Methodologies for Assessing High Performance Skills

Assessment	Method	Audience/ Uses	Competencies	Tool/method requires customization	Level of system change required/ assumed
Work Keys	Paper-and-pencil; some video/audio	Schools, regional partnerships, businesses, states	Applied mathematics; applied technology; listening; locating information; observation; reading for information; teamwork; writing	No	None
Workplace Success Skills	Video-based paper-and-pencil	Schools, regional partnerships, adult workforce development programs, businesses	Interacting with others; listening; structuring work activities; trainability; graphs and charts	No	None
Skill Command	Rubric	Schools, regional partnerships, businesses	Teamwork; interpretation and use of information; problem-solving	No	None
SHL Job Simulations	Simulations	Job interviews in private sector	Functioning in group and team settings; organizing and prioritizing tasks; conducting research, analysis, and idea generation to solve problems	With adaptation, could be used by schools	None
Working	Paper-and-pencil self-assessment	Schools, colleges, adult workforce development programs	Taking responsibility; working in teams; persisting; sense of quality; lifelong learning; adapting to change; permanent problem-solving; information processing; systems thinking	No	None
New Standards Applied Learning Standards	Work samples with rubrics	Districts, for implementation in classrooms	Problem solving; communication information; learning and self-management; working with others	No. Some districts customize by developing locally based exemplary work samples	Requires professional development to help teachers incorporate standards into teaching practice and to assess student performance
New Hampshire's Competency-Based Transcript System	Exemplars/ locally developed rubrics and portfolios	Piloting in fourteen schools in New Hampshire; eventual use by all New Hampshire schools	Decision making and problem-solving; self-management; communication; ability to work with others; information/ use of technology, research, analysis	Yes. Districts in other states would have to customize because the transcript is based on New Hampshire's curriculum frameworks	System is the result of collaboration between state DOE, post-secondary, and business partners; requires professional development for implementation
Coalition of Essential Schools/ Transitions Project	Rubrics/portfolios as part of alternative transcript	Piloting in two schools in California	Coalition of Essential Schools' Habits of Mind, e.g., habits of inquiry; technology; collection and organization of information; communication of ideas; effective cooperation with others; lifelong learning	Yes. Individual schools identify own learner outcomes and revise rubrics accordingly	Requires agreement with postsecondary institutions to credit transcript for admissions; requires professional development on scoring for teachers

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- To provide an opportunity for a teacher, school, district, or community to determine whether the curriculum overall is delivering particular skills. Work Keys has been used in this regard in several localities.

- To give a diagnostic report to a community regarding the skills students are gaining through the existing curriculum. For example, Ohio used Work Keys to determine whether students were prepared for the state's fastest-growing jobs, then devised a strategy to address skill gaps.

3 ***Determine what "evidence" of student learning and achievement the relevant stakeholders will require.*** Most often, these stakeholders are "gatekeepers" such as employers and institutions of higher education. The New Hampshire Department of Education and the California Transitions Project have focused on making credible the attainment of cross-cutting competencies to postsecondary institutions and employers. The SCANS 2000 Center's Career Transcript system allows users to post results from Work Keys and from Work Success Skills for a portable "passport" of learning.

4 ***Determine how much change your system—school department, school/community partnership, or school—will be willing to undertake.*** For example, implementation of the New Standards requires professional development to help teachers incorporate the standards into teaching practice. Several of the tools described here require the creation of "assessor networks" within or across schools so that teachers and other assessors can come to agreement on process and standards. In addition, many of the tools identified here require adaptation by local users, as noted in matrix above.

On-Demand Tests, Both Multiple-Choice and Short-Answer

Several companies have developed "ready-to-use" assessment systems that businesses can use to assess job applicants or that schools or industry/education partnerships can use to assess student and worker skill levels. These methodologies have the advantage of being legally defensible. Also schools, community organizations, and school/community partnerships can adapt them to identify skill gaps and the training needs of students and potential workers. These assessment systems identify knowledge of competencies, rather than the ability to apply competencies in context.

WORK KEYS

Work Keys is a three-stage employability skills assessment tool that includes job analysis, assessment, and instructional support. Widely used by industry, education systems, and business/education consortiums, the Work Keys system is built around a set of scales that measure both the skills of individuals and the competency levels required for successful job performance. Work Keys is a program of ACT, Inc., an organization most widely known for its college admissions testing service.

Work Keys provides highly detailed information about skill levels in eight "foundation skills," or "the skills needed to learn other skills:"

- *Applied Mathematics:* Applying mathematical reasoning to work-related problems;

- *Applied Technology:* Basic principles of mechanics, electricity, fluid dynamics, and thermodynamics as they apply to machines and equipment found in the workplace, with the emphasis on problem-solving;

- *Listening:* Listening to and understanding work-related messages;
- *Locating Information:* Locating, comparing, summarizing, and making decisions using information in workplace graphics (e.g., diagrams, floor plans, tables, forms, graphs, charts, instrument gauges);
- *Observation:* Noticing details and paying attention to instructions and demonstrations;
- *Reading for Information:* Reading and understanding work-related instructions and policies in memos, bulletins, notices, letters, policy manuals, and governmental regulations;
- *Teamwork:* Choosing behaviors and/or actions that simultaneously support relationships within the team and lead toward the accomplishment of work tasks; and
- *Writing:* Writing work-related messages and summaries.

Each skill area is scaled from the lowest level for which employers are willing to test up to the point at which specialized training is needed. Several of the skills are assessed through traditional, paper and pencil testing, while others incorporate the use of audio or videotapes that provide prompts or scenarios to which the student must respond. Testing time ranges from 40 to 80 minutes.

Work Keys materials suggest that students work with counselors to take the assessments and pinpoint areas for improvement. The accompanying Targets for Instruction manuals are designed to be incorporated into classroom curricula; they include descriptions of the skill levels, examples of skill building strategies, and work-related scenarios at each skill level.

In Ohio, the Ohio Business Roundtable and the Ohio Department of Education hired ACT to both profile the state's fast-growing jobs and assess the skill levels of 14,000 high school seniors from urban, suburban, and rural communities. The results indicated that only one in fourteen seniors met the profile across four skill areas (applied mathematics, reading for information, applied technology, and locating information). The initiative's recommendations included raising academic standards, increasing opportunities for work-based learning, and continuing the use of skill-based assessments.

In California, the Tri-Valley Education Collaborative has used Work Keys as a diagnostic tool to pinpoint needed changes in curricula and, less extensively, with a small group of students to assist them in undertaking more careful career planning. In 1998, the Collaborative piloted the Work Keys assessment with about 500 students from comprehensive and alternative schools, then gathered district leaders to discuss aggregated results for their schools. The Collaborative hopes to build on that pilot by engaging schools in extended discussions about what curricular changes would be necessary to improve student scores.

Work Keys, ACT Inc, 3355 Lenox Road, NE, Suite 320, Atlanta, GA 30326-1332 (404) 231-1952; www.act.org/workkeys/tour/index.html

WORKPLACE SUCCESS SKILLS

Learning Resources, Inc., provides a video-based, criterion-referenced SCANS assessment used in high schools, businesses, postsecondary institutions, and welfare training programs. The Workplace Success Skills (WSS) assessment system was developed and validated in collaboration with industry representatives. Educators use it to assess curricula and to assist students in identifying strengths and weaknesses; employers use it to screen applicants for entry-level

jobs and to give feedback to employees so that they may upgrade their work-relevant skills. WSS is also being used by the SCANS 2000 Center, described below, in three ways: (1) as a pre- and post-test to assess community-college students' acquisition of SCANS skills; (2) to assess the basic skills of participants in welfare-to-work programs for the purpose of providing developmental feedback; and (3) as part of an incumbent worker/organized labor program funded by the U.S. Department of Labor.

WSS assesses thinking skills (creative thinking, decision making, problem solving, knowing how to learn, and reasoning) and personal qualities (responsibility, sociability, self-management, and commitment to quality).

There are five sections to the assessment:

- *Interacting with Others:* The participant views brief vignettes of work situations with hourly workers and their supervisors as central characters. Periodically, the video stops; the participant must respond to multiple-choice questions requiring judgment about actions or decisions.
- *Listening:* The participant views video vignettes that present information and instructions orally; they must answer multiple-choice questions about factual content interpretation.
- *Structuring Work Activities:* A supervisor gives the participant oral instructions on a complicated task; the participant must chronologically list the actions required to complete the task.
- *Trainability:* The participant answers multiple-choice questions on a training video covering complex material.
- *Graphs and charts:* The participant answers multiple-choice questions about information contained in graphs and charts.

If all five modules are used, the assessment takes about 2.5 hours and requires a PC with either Internet access or a modem, a VCR with monitor, and paper and a pencil. The participant views the video scenarios and puts answers to questions onto an answer sheet. A test administrator then transfers the answers to the PC, which sends them to a host computer for scoring. Finally, the host computer transmits a comprehensive feedback report back to the local computer. Because the host computer does the scoring, no professional development costs are associated with WSS. As of September 2000, a modem will no longer be required: data and reports may all be scored by the Internet.

The feedback report contains:

- Probability-of-success information, based on a comparison of the examinee's scores against a validation group (the database of scores exceeds one million people);
- A rank ordering of the participant's facilitation skills, influence skills (guiding the actions and thinking of others), customer service orientation, problem-solving skills, and listening skills;
- A detailed report showing areas where the participant's performance was satisfactory and where development is warranted; and
- Suggested activities for improving performance in the assessed skill areas.

In addition to the feedback report, resources designed to support educators and trainers include a facilitator's guide to manage discussion questions about the skills measured by WSS. A comprehensive list of print-based scenarios has been designed to foster discussion and the development of individuals' competence in areas measured by the program.

In Indiana, Ivy Tech State College has worked with the state's Department of Workforce Development

and a consortium of businesses in a particular community to assess employees' skill levels and to identify areas of opportunity for collaborative training. The WSS feedback reports provided employees with feedback targeting opportunities for individual's development. Group reports provided individual organizations with information regarding their workforce as a whole and where training was required to bring groups to higher levels of performance. Finally, reports provided information regarding potential areas for collaboration in investing training and development dollars.

Workplace Success Skills, Learning Resources Inc., 700 Canal Street, Stamford, CT 06902-5921 (203) 637-5047; www.learning-resources.com

Self-Assessments

WORKING: ASSESSING SKILLS, HABITS, AND STYLE

"Working" is a statistically valid self-assessment tool that can be used in a wide range of educational and training settings to assess nine SCANS competencies: taking responsibility, working in teams, persisting, a sense of quality, lifelong learning, adapting to change, permanent problem-solving, information processing, and systems thinking.

The assessment is administered in 30 minutes and can be self-scored. Individuals complete 50 questions, such as "I usually do something I enjoy rather than try something different" or "When learning something, I first think carefully about the very best way to tackle it." For each question, individuals rate the statements as "Almost never like me; Occasionally like me; Moderately like me; Quite a bit like me; or Almost always like me." Working includes materials that can be used in worksites or training programs as follow-up activities to help individuals determine ways to strengthen their behavior in particular areas.

The Lucent Technologies Manufacturing Workforce Collaborative used Working to assess student learning in a curriculum pilot project that targeted five general skill areas identified as necessary for the manufacturing workforce: personal, interpersonal, systems, procedures, and information. Fifty-seven incumbent workers participated in the curriculum pilot project, completing the Working self-assessment as a pre- and post-test. While the population size was too small to generate statistically valid findings on gains/losses in any of Working's nine competencies, the Collaborative cited percentile increases in "Responsibility" and "Teamwork" as indicative of the impact of the training.

Working: Assessing Skills, Habits, and Style, H&H Publishing Company, Inc., 1231 Kapp Drive, Clearwater, FL 33765 (800) 366-4079; www.hhpublishing.com

Competency Assessment in Schools

NEW STANDARDS PROJECT'S APPLIED LEARNING STANDARDS

The New Standards Project, a partnership between the National Center on Education and the Economy and the University of Pittsburgh, has designed Applied Learning Standards. Part of a package of performance standards that includes English Language Arts, Mathematics, and Science, the Applied Learning Standards are one of the most established systems for assessing cross-cutting competencies in an academic context.

The New Standards Project does not propose that Applied Learning be a separate area of study but that students draw from other subjects to meet the standards. The project elected to develop separate standards, however, to ensure that cross-cutting competencies do not get lost in the demands of more academic subjects. The five performance standards are:

- Problem solving;
- Communication tools and techniques;
- Information tools and techniques;
- Learning and self-management tools and techniques; and
- Tools and techniques for working with others.

The standards are set at the level of the tenth grade, consistent with the partners' interest in all students across the country completing a common academic core by the end of the tenth grade and achieving a Certificate of Initial Mastery.

The New Standards Project describes the problem-solving standard as the "centerpiece" of the standards. It defines projects organized around three kinds of problem solving:

- Design a product, service, or system in which the student identifies needs that could be met by new products, services, or systems and creates solutions for meeting them;
- Improve a system in which the student develops an understanding of the way systems of people, machines, and processes work, troubleshoots problems in their operation, and devises strategies for improving their effectiveness; and
- Plan and organize an event or an activity in which the student takes responsibility for all aspects of planning and organizing an event or an activity from concept to completion.[2]

The four other standards describe tools and techniques that can be used to complete projects that meet the problem-solving standards. The New Standards partners are clear that these tools and techniques should not be learned and practiced in a piecemeal way; they must be integrated into projects, and projects should involve subject matter related to the core subject standards.

As with its core subject standards, the New Standards Project defines each standard and delineates performance descriptions that explicitly describe what students should know and be able to do. The performance descriptions are concrete and defined in terms of actual products, services, or performances that students can use to show evidence of achievement of the standard.

The project includes samples of standard-setting student work, collected from more traditional academic disciplines, as evidence of proficiency in applied learning standards, and it includes commentary on how the work meets the standards. The work samples and commentary are detailed, including a description of the task, the circumstances of performance, the student work, and an evaluation of what the sample of student work shows regarding student performance of the standards. Teachers can use the criteria described in the Applied Learning Standards to benchmark their own students' work. The project's cross-referencing system enables teachers and students to identify ways in which projects may be used to show evidence of meeting more than one standard in Applied Learning as well as in academic disciplines.

The Fort Worth (Texas) Independent School District collaborated with the New Standards Project by serving as an implementation site for the pilot New

[2] New Standards Performance Standards, Volume 3: High School, p. 106.

Standards in the early 1990s. The district had undertaken a survey of employers and determined that many of the skills required in the Fort Worth economy were not being taught in the schools, and it had initiated a project to incorporate workplace competencies into academics.

Every summer, a new cohort of 30–40 teachers is trained in applied learning pedagogies: teachers develop projects in their content area (i.e., math, science, or English) that incorporate workplace skills. The school system has done some work developing rubrics that map to the Applied Learning standards, based on adult models of performance. In addition, teachers participating in the summer training are encouraged to engage their students in developing rubrics tailored to each specific project and that take into account both content and the Applied Learning standards. Teachers and students work together to determine "how good is good enough?" Students develop their sophistication in identifying, and producing, quality work through participating in the rubric development process.

New Standards Project, National Center on Education and the Economy, 700 Eleventh Street, NW, Suite 750, Washington, DC 20001 (202) 783-3668; http://ncee.org

NEW HAMPSHIRE'S COMPETENCY-BASED TRANSCRIPT

New Hampshire is a leader, among New England states and nationally, in designing and piloting a competency-based transcript. A competency-based transcript is a tool for documenting and assessing skills and knowledge gained through both academic and out-of-school learning opportunities. It can include traditional measures of academic achievement, such as SAT scores and grades, as well as more innovative measures of student performance, such as judgments of proficiency.

Under the leadership of the New Hampshire Department of Education, the transcript was designed through a collaborative process including representatives from secondary schools, post-secondary institutions, business and the community, in accordance with the state's curriculum frameworks for career development, English Language Arts, Mathematics, Science, and Social Studies. Work groups identified a number of important features that would characterize New Hampshire's transcript. These features included: combining traditional reporting measures (grades) and newer competency-based measures of proficiency; aligning the transcript with the state's academic standards and career-development frameworks; and recognizing a variety of community and workplace learning experiences.

The state Department of Education issued a Request for Proposals, asking school districts to apply to be "Benchmark Communities," based on their ability to document evidence of progress in implementing education reform strategies and their interest in piloting the competency-based transcript. In the spring of 1998, the department designated four school districts as Benchmark Communities.

In the winter of 1998-99, in preparation to use the competency-based transcript in the following school year, the Benchmark Communities refined the pilot document. They decided to modify the draft transcript to use summative, rather than course-based, judgments. In other words, the transcript would reflect a single judgment of student proficiency for each designated competency area at the end of a school year, drawing on evidence from various learning experiences. The pilot would focus only on documenting student abilities related to five high-performance skill sets or competencies: decision-making and problem-solving skills, self-

management, communication skills, ability to work with others, and information use (technology, research, analysis). Competencies in core academic areas would be incorporated in later years.

Work groups, drawn from each of the Benchmark Communities, took on the task of developing common guidelines for assessing and documenting student learning in relation to each of the high-performance skills. During the spring of 1999, working with Jobs for the Future and a consultant, the groups created a work plan for the pilot. Each of the four schools made a commitment to:

- Pilot the transcript in at least the tenth and eleventh grades;
- Include at least 15 percent of the students in each grade;
- Select a diverse, representative sample of students and faculty to participate;
- Offer students a variety of opportunities to collect evidence both within classes and from non-classroom settings; and
- Prepare *all* teachers at the pilot schools for mapping their courses against the transcript to show how and where students could collect evidence of mastery of the five high-performance skills.

In September 1999, the four Benchmark Communities began using New Hampshire's pilot competency-based transcript, with a goal of eventual expansion to include the academic frameworks and transcript use for post-secondary admissions and employers. Each participating student became responsible for collecting his or her own work samples as evidence of mastering a particular competency, and then presenting this portfolio to a mentor/advisor or a designated assessor. Students submitted evidence of proficiency in the high-performance skills from academic courses and out-of-school learning experiences; they were judged as not meeting, meeting, or surpassing the standards. Teachers learned to assess portfolio collections of student work against the written performance standard for each competency, while students became acquainted with the performance standards and were coached in collecting evidence of proficiency for their transcripts.

During the 1999-2000 school year, all the high schools used the same standards and the same format for the competency-based transcript. Each school developed a plan for internal processes to ensure consistent judgments among its assessors. Eventually, these judgments will be determined at each high school grade level and at exit from high school. As the pilot evolves, districts will work together to ensure that judgments of proficiency are determined consistently across schools; this will be key to ensuring that the transcript provides meaningful evidence of student learning statewide.

Ultimately, New Hampshire's objective is ambitious: to engage public and private post-secondary institutions in using the competency-based transcript in the admissions process, and to involve employers in using the transcript as part of their hiring process. As one step toward that end, for the 2000-2001 school year, the transcript pilot has expanded, and added ten new districts to the original four. In addition, the state has expanded the scope of the pilot transcript to assess student performance against proficiency standards in four core academic areas, outlined in the state's curriculum frameworks, in addition to assessing student high performance skills. New Hampshire's intention over the next few years is to use the pilot and other methods to expand interest in, and use of, a revised competency-based transcript statewide.

Contact Mariane Gfroerer, Guidance and Counseling Consultant, New Hampshire Department of Education, 78 Regional Drive, Concord, NH 03301 (603) 271-6691.

THE COALITION OF ESSENTIAL SCHOOLS/ TRANSITIONS PROJECT

Schools that are members of the Coalition of Essential Schools network subscribe to ten principles of reform, one of which refers to methods of assessment: "Teaching and learning should be documented and assessed with tools based on student performance of real tasks. Multiple forms of evidence, ranging from ongoing observation of the learner to completion of specific projects, should be used to better understand the learner's strengths and needs, and to plan for further assistance...The emphasis is on the students' demonstration that they can do important things."

In the process of determining what the "important things" are that students need to know and be able to do, many Essential schools have articulated a set of learner outcomes that encompass and go beyond traditional academic content mastery. For example, Hoover High School in San Diego expects all students to demonstrate progress on six learner outcomes that are similar to the SCANS skills: habits of inquiry, the experience of technology, collection and organization of information, communication of ideas, effective cooperation with others, and lifelong learning.

Hoover students learn these skills as they move through ninth/tenth-grade interdisciplinary courses and eleventh/twelfth-grade "institutes" (or career pathways). Career exploration and community learning activities are a feature of all four years. A school-wide rubric that contains performance descriptors for each learning outcome is used to assess student work, with a six-level scale ranging from "Distinguished" to "No Evidence." "Achieves Standard" indicates that the student has performed to grade level; "Mastery" and "Distinguished" indicate that the student has surpassed grade level.

For the past five years, Hoover and another Coalition school, Homestead High School in Cupertino, have participated in the Transitions Project, a California-based initiative to document student learning through performance assessments for entrance into the state's postsecondary institutions.[3] Hoover's Transitions transcript documents a student's performance in each subject area in relation to the learner outcomes. For example, a student might score "Mastery" in the learner outcome "Communication" in the humanities course, while scoring "Achieves Standard" in the learner outcome "Collaboration" in biology. While individual teachers score portfolio projects, Hoover used a consensus-scoring process to review student work for the more high-stakes transcripts required by the Transitions Project. To prepare for this, teachers participated in school-wide staff development on the consensus scoring of student work.

At Homestead High School, three of the school's "Expected School-Wide Learning Results"—communication skills, work skills, and thinking skills—cut across disciplinary boundaries and are developed as graduation-level, rather than grade-level, performance expectations. Assessments of these outcomes are designed to reflect students' progress in moving from

[3] Several other high schools participated in the project, a collaboration among the California Center for School Restructuring, Pacific Education Group, and the Bay Area Coalition of Essential Schools. Only Hoover and Homestead and one additional San Diego high school, Rancho Buena Vista, developed rubrics and participated in the process of submitting alternative transcripts to the California public university systems throughout the life of the project.

"Novice" to "Exceeds Standards" in relation to a given standard. For example, while a ninth-grade student might be expected to score at the "Novice" level, s/he would be expected to progress to "Proficient" by graduation. The fourth Learning Result relates to standards that are specific to course content, and these are assessed separately according to grade-level expectations using a four-level scale, from "Novice" to "Exceeds Standards."

Homestead High School created, but later suspended, integrated studies programs in grades 9/10 and 11/12, organizing them around essential questions or problems. Because the integrated studies programs were not school-wide, they involved only a subset of teachers and students in submitting alternative transcripts under the Transitions Project. However, other teachers, across the school, use the Transitions Project rubric. Because not all teachers use the performance assessments, Homestead's transcript includes both performance assessments, where available, and course grades.

For more information, see "New College Admissions Procedures: Implications for Career-Related Learning in High School," National Center for Research in Vocational Education, August 1999; or go to the Coalition of Essential Schools Web Site: www.essentialschools.org.

SCANS 2000 CENTER/AES INTERNATIONAL "SKILL COMMAND"

SCANS 2000 at The Johns Hopkins University and collaborators have developed CD-ROM case studies designed to help community college students master SCANS skills within their academic coursework. The case studies simulate real workplace problems: they are "messy" situations requiring sustained effort, complex decision making, research, and the use of knowledge and applications from many disciplines. Project developers identified problems, wrote the stories, included data (and gaps in knowledge), developed characters and dialogue, and developed the CD-ROMs to include simulated offices.

Students work in teams to solve the problems, each of which addresses one or two primary SCANS skills as well as specific academic content. The CD-ROM provides enough data to get started and carefully placed tutorials on such topics as linear programming, statistics, and simulated flow-charting. Periodically, students are directed to stop the CD and complete activities. Students may arrive at solutions contained within the CD-ROM, or they may develop alternative solutions not envisioned by the project developers.

To assess student learning, SCANS 2000 surveyed the field to identify tools for assessing some of the "hard to measure" skills, such as teamwork, that the CD-ROMs emphasize. The effort has selected two measures, one for diagnostic purposes and one for standardized assessment, and opted to pilot these in three SCANS skills: teamwork, interpretation and use of information, and problem-solving.

For diagnostic assessment, SCANS 2000 turned to AES International, a company founded in 1993 for the purpose of providing tools in support of the recently released SCANS skills. SCANS 2000 worked collaboratively with teachers and AES International to develop assessment rubrics from AES' "Skill Command," an assessment instrument in which various people (e.g, teachers, peers, employers, self) rate participants' behaviors. The assessment rubric breaks each of the major skills into multiple behaviors on which teachers rate students on a scale from "No Understanding" to "Expert." For example, the rubric lists seven behaviors under problem-solving, ranging

from "Clearly Defines the Problem" and "Considers Alternative Solutions" to "Monitors Progress of Proposed Solution." The instrument also specifies when to measure students on each of the skills. For example, students are assessed on problem-solving at the same time they are assessed on solving the advertising budget, using the CD-ROM, in an algebra class. The "teamwork" skill assessment is anchored to the task through which team members must select a car to market, and it assesses students' cooperation with and contribution to their team. Each task is rated with a SCANS level of difficulty because, for example, problem solving in one venue may be more complex than in others.

For a more objective pre- and post-assessment, the team selected the Work Success Skills video simulations, profiled above. It selected the WSS system for three reasons: the WSS videos measure the skills emphasized in the CD-ROMs; it is objective and industry-validated, predicting job success four times more accurately than an interview; and it generates data on student performance that includes information on strategies a teacher or the learner can use to address specific skills gaps.

The SCANS 2000 team is piloting the assessment process with community college partners and will work with the faculty to expand the number of tasks and skills they will assess. Meanwhile, the SCANS 2000 team, in partnership with AlignMark, has developed a Career Transcript System (CTS) that is being piloted throughout the country in high schools, universities, and social-service agencies. The CTS tracks and documents the attainment of SCANS skills. The participant takes part in an assessment such as Work Success Skills or Skill Command; the assessment results are posted to the CTS; and if the participant likes the data then s/he "authorizes" the information to be posted to the transcript, where employers can view it. The result is a transcript, similar to a résumé in that it shows past job-relevant experience, yet different from a résumé in that the employer is assured that the information is validated through an objective source. These transcripts are expected to facilitate entry into the workforce and provide a platform for documenting developmental change throughout a participant's career.

For more information about Skill Command, go to www.skillcommand.com. To learn more about SCANS 2000, go to www.scans.jhu.edu.

Competency Assessment in the Workplace

The Massachusetts Work-Based Learning Plan was developed for the use of employers offering work experiences to high school students. It is a tool for assessing student learning of cross-cutting competencies in the workplace. The other two assessment methods described below—SHL Assessment Centers and Behavioral Interviewing—are used in the workplace to identify and develop entry-level and executive-level employees; these have not yet been implemented in schools. Both are included here because they focus on training assessors to use observational skills to assess performance. School systems might adapt this methodology to assist teachers in using observational skills to identify ways in which students are, or are not, gaining high-performance skills in accomplishing school-related tasks.

MASSACHUSETTS WORK-BASED LEARNING PLAN

In 1996, the Boston Private Industry Council (PIC) created a Work-Based Learning Plan to enhance the quality of work-based learning in its programs that link academic and career-related classes with work-based learning. The PIC revised occupation-specific training plans to focus instead on broad competencies that Boston employers, schools, and community members agreed were essential to success in higher education and the world of work. The learning plan is a master form that students, teachers, worksite supervisors, and PIC staff complete for each placement. It focuses students, employers, and school-based personnel on a mutually agreed-upon set of skills and abilities that students should have the opportunity to develop. It also provides an opportunity for teachers and workplace supervisors to engage together in developing the skills and competencies of individual students, allowing for a greater connection between classroom and workplace learning.

The Massachusetts Office of School-to-Career, through a statewide Work-Based Learning Statewide Steering Committee, has adopted the Work-Based Learning Plan for use across the state, and has created an electronic version of the Plan along with a guide for supervisors on its use. The Massachusetts Office of School-to-Career has also released a toolkit to help trainers across the state train employers, educators, students, and parents on how to ensure an effective work-based learning experience. The toolkit contains a CD-ROM with reproducible materials from the toolkit, including the Work-Based Learning Plan.

The learning plan covers nine competencies of three overall types:

- *Individual Competencies:* communication and literacy; organizing and analyzing information; problem solving; using technology; and completing entire activities;
- *Team Competencies:* acting professionally; interacting with others; understanding all aspects of the industry; and
- *Personal and Professional Development Competency:* taking responsibility for career and life choices.

Each of the nine competencies is further divided into more specific skills. The Work-Based Learning Statewide Steering Committee developed a rubric that specifies ratings for each skill, ranging from "Needs Development" to "Advanced." For example, under the speaking skill (communication and literacy competency), a student rated "Needs Development" is "learning to speak clearly, audibly, and courteously;" a student rated "Proficient" "expresses complex ideas in a well thought-out, organized, and concise manner." Under the research and analysis skill (organizing and analyzing information competency), a student who "Needs Development" is "developing familiarity with pertinent information;" an "Advanced" student "develops theories of action and tests them in practice."

The learning plan asks supervisors to undertake a three-step process:

1 Use the plan to identify the job description and tasks to be completed, then pick the three to five competencies most critical to the job.

2 After observing the student's on-the-job performance for a week or two, conduct an evaluation with the student and set goals in competency areas.

3 At the end of the work experience, or at appropriate intervals during longer placements, conduct a follow-up assessment meeting with the student.

Instructions for the learning plan encourage supervisors to complete the ratings with the student so that students develop an awareness of their own skills levels and an understanding of the learning potential of the workplace.

The PIC has adapted the learning plan for alternative education initiatives, such as Diploma Plus, a program for at-risk and out-of-school student participants that requires at least 150 hours of paid or unpaid work or community service. It has also introduced the learning plan and its competencies to job shadowing experiences: employers can use the competencies to show students the skills needed for the workplace, while teachers can use them in the classroom as a "checklist" that gives students an analytic framework to reflect upon their brief experiences and compare them to past or future shadows.

Massachusetts Work-Based Learning Plan, Massachusetts Department of Education, 350 Main Street, Malden, MA 02148 (781) 388-3382; www.doe.mass.edu/stw/mwblp.html. This web page has many tools and materials on the implementation of the work-based learning plan.

BEHAVIORAL INTERVIEWING

In behavioral interviewing, a strategy widely used by businesses, interviewers elicit actual examples of past behavior in order to predict future performance. Most often, the skills for which behavioral interviewers probe are "soft" skills, such as attention to detail, leadership, initiative, and decision making. As one private-sector user of this methodology put it, "Technology skills are easy to measure. We use behavioral interviewing to help us identify which applicants have the leadership and organizational capabilities to succeed on the job." Its proponents argue that questions about what an applicant *did* are better predictors of behavior than questions about what an applicant *would do*. Behavioral interviewing focuses less on content or technical knowledge and more on how an applicant accomplished activities in previous employment.

Often, businesses use consultants to help them identify critical competencies for particular jobs and to train their staff on behavioral interviewing techniques. In this way, it is also a more efficient means of interviewing than most: interviewers can assess for particular skills, rather than use a broader assessment instrument to assess all cross-cutting competencies.

Typically, a business will identify the competencies demonstrated in effective performance of a job, then develop job-related questions to gather examples of related past activities. For example, to probe for an applicant's attention to detail, an interviewer might ask the applicant to give an example of when s/he had to deliver a finished product under a tight deadline. The trained interviewer listens for clarification, paying attention to what descriptive words the applicant uses to describe the event. For example, the interviewer might say:

- What were you thinking?
- What were you feeling?
- What was your contribution to that?
- Walk me through your thought process.
- Take me through that step by step.
- How did you know what to do?

Afterward, the interviewer codes the interview, often using a rubric developed specifically for the identified competencies.

The Bank of America has adapted the behavioral interviewing process with its welfare-to-work program. In recognition of former welfare recipients' previous experience, the bank's human resources staff are trained to elicit examples of past performance in the home as well as in the workforce, and partnering community-based organizations train applicants who have been on welfare to develop examples from both work and home experience to identify competencies.

The behavioral interviewing process contains clues as to how teachers might enhance their assessment of individual or group projects. For example, a teacher could probe for specifics about what students did and thought in producing a report or project, or might ask students to clarify their individual input into a group effort. Student projects are often assessed solely through the presentation of a finished product: behavioral interviewing is a way to make visible the often invisible learning in problem-solving or teamwork gained through projects.

SHL ASSESSMENT CENTERS

SHL, an international human resource consulting firm founded by industrial psychologists in 1977, helps organizations assess, select, and develop employees at all levels. SHL has developed an array of "assessment centers." These are simulations of employee tasks and accompanying tools to assess how individuals address work-related challenges, such as functioning in group and team settings, organizing and prioritizing critical tasks, and conducting research, analysis, and idea generation to solve problems. Assessment centers may be job-specific, or they may assess for skills across a variety of positions.

Tools include:

- Group exercises with assigned roles, in which every participant is given a different set of background materials;
- Group exercises with unassigned roles, in which all participants receive the same background materials;
- "In-tray" exercises, in which participants must analyze and prioritize written documents and propose actions;
- Fact-finding exercises, through which an individual starts with partial knowledge and must decide what extra information is required to complete the tasks, often with a "resource person" available to provide additional information as requested; and
- Analysis-presentation exercises, in which participants must absorb and analyze information, then present their conclusions and recommendations for action.

For the group exercises, participants receive materials (e.g., site plans, sales figures, staffing requirements) and have 10 minutes to prepare for the exercise individually. The group then has 50 minutes to determine a solution to the given problem, such as determining the allocation of space in a new office or manufacturing space. Trained assessors observe the participants' actions and rate their performance according to a scoring rubric. For example, to assess "influence," assessors must determine if tasks are delegated appropriately; to assess "team membership," assessors determine if all suggestions of the group are considered or dismissed out of hand.

The simulations have been used in a wide variety of settings for both hiring and staff development purposes. Because it can be costly to train assessors, the simulations tend to be used for senior management positions, although companies have used them to identify promising college graduates. For example, financial institutions have used SHL simulations to recruit financial analysts; a major pharmaceutical corporation has used them to hire sales staff, and a major chemical corporation has used them as a developmental tool for its managers around the world. A major national insurance company conducted a "high fidelity simulation" in which applicants viewed a video of the performance of the desired job, participated in a tutorial on the fundamentals of the company's customer service software, and then were assessed as they responded to simulated calls from customers asking for assistance.

Educators interested in experimenting with the assessment center process for their classroom might adapt a simulation that is not occupation-specific. For example, they might assess students' skills in gathering and analyzing information, prioritizing tasks, or making presentations.

SHL North American Headquarters, Flatiron Park West, 2555 55th Street, Suite 201D, Boulder, CO 80301 (303) 442-5607; www.shlusa.com

Competency Assessment in Adult Education Settings

EQUIPPED FOR THE FUTURE

The National Institute for Literacy, an independent federal organization, has developed a set of learning standards that are based on the knowledge and skills that adults need in order to carry out their roles and responsibilities as workers, parents and family members, and citizens and community members. Through a collaborative and grassroots process involving adult education initiatives across the country, the Institute has identified skills and knowledge that are critical to family, civic, and work life. Equipped for the Future (EFF) Standards for Literacy and Adult Lifelong Learning were developed through a careful research process with adult learners, resulting in a core set of 16 content standards that include workplace competencies but encompass the complexities of negotiating civic and family life as well.

The Equipped for the Future skills are as follows:

- *Communication Skills:* Read with understanding, convey ideas in writing, speak so others can understand, listen actively, observe critically;
- *Decision-Making Skills:* Use math to solve problems and communicate, solve problems and make decisions, plan;
- *Interpersonal Skills:* Cooperate with others, advocate and influence, resolve conflict and negotiate, guide others; and
- *Lifelong Learning Skills:* Take responsibility for learning, reflect and evaluate, learn through research, and use information and communications technology.

In developing the standards, collaborators started with the question of what adult "competence" looks like, paying attention to the range of adult learners from those with basic skills to those with formal education and experience. They have identified *four key dimensions of performance* to generate detailed descriptions of learner performance. Performance dimensions will eventually be used for placing descriptions on a developmental performance continuum for each EFF standard. These dimensions are:

- Depth and breadth of knowledge base;
- Degree of independence;
- Range of conditions under which one can perform; and
- Degree of fluency and flexibility with which one can perform.

The National Institute for Literacy is using a grassroots approach to developing the EFF assessment framework. The institute is working with adult education programs in five states (Maine, Ohio, Oregon, Tennessee, and Washington) to identify a research-based performance continuum for each EFF standard that will support the identification of level descriptors for all 16 standards. Participating teachers are collecting information about student performance and progress against the content standards, using a data collection template that focuses observation and documentation of learner performance on the four dimensions of skill performance.

Currently, the most common way that adult education practitioners are assessing the EFF standards is through the use of portfolios. For example, at the Even Start Program in Canton, Ohio, adult learners participated in a joint project with a hospital, decorating sweatshirts for donation to a local charity. The teachers decided to use this activity to teach the skill "plan," one of the decision-making skills.

First, Even Start teachers reflected on the degree to which the students already had the skill of planning; they determined what to look for in order to know if the students were attaining this skill, focusing on the four dimensions of standards, described above—for example, can students plan independently? Can they plan under a range of conditions? Then, the teachers explicitly taught the steps to planning, using the standard's components of performance as a guide. With teacher guidance, students developed the plan for accomplishing the task of creating the sweatshirts. After students carried out the activity of creating the sweatshirts, they held discussions to evaluate the activity and their planning process. Students then completed a written self-evaluation, which they placed in their portfolio.

The assessment of student learning was based on teachers' ongoing observation of student performance in this activity and in other arenas of their lives. For example, the teachers provided follow-up activities to determine if their students had learned how to plan, which also gave students the opportunity to transfer skills to another context. In one such activity, students had to complete an individual written plan before working on creating a "literature kit" for their children, rather than developing a plan as a group with teacher guidance. Teachers used this activity as a post-test to identify whether students could integrate all the skill's components and in what areas students needed further skill development. Teachers also pointed out to students when they were successfully integrating the skill into their daily lives, such as when they had to plan to secure day care arrangements. This helps students to reflect on their own skill attainment and to convey it to others.

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Along with other student work, the written plans for each activity were included in their portfolios. Students' accomplishments, documented in the portfolios, form the basis for "Career Passports" that students use for employment searches. The Career Passport summarizes a student's marketable skills and includes a résumé, awards or certificates, a list of the person's competencies, and letters of recommendation.

For more information about Equipped for the Future, contact the National Institute for Literacy, 1775 I Street, NW, Suite 730, Washington, DC 20006, (202) 233-2025; www.nifl.gov. Equipped for the Future publications are available from ED Pubs: 1 (877) 433-7827. For more information about the Even Start program, contact Jane Meyer, Adult Basic and Literacy Education Coordinator, Canton City Schools, (330) 588-2148, ext. 130.

Conclusion

Interest in assessing high-performance skills is coming from many quarters: employers, state colleges, and universities that reside at the junction between education and the economy; high school educators seeking to expand beyond traditional curricula and outside the school walls; and parents concerned that their children get critical thinking skills necessary for success in postsecondary education and in high-skill careers. This guide can serve as a starting point for those who seek to equip young people with a broad range of cross-cutting, high-performance skills that will help them succeed in postsecondary education and in the changing economy.

Northeast and Islands Regional Educational Laboratory

a program of The Education Alliance at Brown University

The LAB, a program of The Education Alliance at Brown University, is one of ten educational laboratories funded by the U.S. Department of Education's Office of Educational Research and Improvement. Our goals are to improve teaching and learning, advance school improvement, build capacity for reform, and develop strategic alliances with key members of the region's education and policy making community.

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LAB at Brown University
The Education Alliance
222 Richmond Street, Suite 300
Providence, RI 02903-4226

Phone: 800/521-9550
E-mail: info@lab.brown.edu
Web: www.lab.brown.edu
Fax: 401/421-7650

Jobs for the Future (JFF) is a LAB partner organization. JFF is a national non-profit organization that works to strengthen the foundation for economic opportunity and civic health in America by advancing the understanding of the skills and knowledge required for success in the new economy. JFF works locally and nationally to develop innovative workforce development solutions that help people make effective lifelong transitions between work and learning.

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Adeline Becker
Executive Director, The Education Alliance

Phil Zarlengo
Executive Director, The LAB at Brown University

Vincent Ferrandino
Chair, LAB Board of Governors

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David Wolk

LAB

Northeast and Islands Regional Educational Laboratory

a program of

THE EDUCATION ALLIANCE

222 Richmond Street, Suite 300
Providence, RI 02903-4226

Phone: 401/274-9548
Fax: 401/421-7650
E-mail: info@lab.brown.edu
Web: www.lab.brown.edu